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Impacts of Internet Usage on the Organization of Small and Medium-sized Enterprises: Case of Manufacturing SMEs in downtown Antananarivo- Madagascar

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Abstract

The rise of new Internet technologies represents a significant and compelling advancement on a global scale, exerting a dynamic influence on business management. The ongoing digitization process rapidly transforms the structure of value chains, creating new opportunities to enhance value creation for businesses and institutions at an organizational level. However, the widespread adoption of the Internet presents a challenging landscape for small and medium-sized enterprises, which must navigate significant financial obstacles and market uncertainties. Despite these challenges, the use of the Internet deeply influences the daily environment and social dynamics of SMEs. Our research aims to delve deeper into this impact by analyzing how Internet usage affects the organizational framework of small and medium-sized enterprises. We conducted a survey involving more than 125 manufacturing SMEs between 2021 and 2023 in downtown Antananarivo- Madagascar and its surrounding areas, and we performed statistical analysis on the collected data using SPSS and XLSTAT software.

Keywords
Company, Internet, Organization, Environment, Change, and Development

I. Introduction

Small and medium-sized enterprises (SMEs) constitute the backbone of most economies worldwide, regardless of their level of development. They hold a pivotal position in economic dynamics, acting as significant engines of job creation and wealth generation in developed nations (Mahmoud, 1992; Soureya & Amadu, 2022). The emergence of the Internet within this sector brings about substantial transformations both in exploitation and organization (Gollac et al., 2000; Goumghar & Fikri, 2022; Stouten et al., 2018; Tortorella et al., 2020). The need for organizational change becomes a critical area of focus, presenting itself as a necessary and profound managerial challenge for leaders and middle managers responsible for upholding their organization's competitive edge (Helfat & Raubitschek, 2018;

Lorino & Peyrolle, 2005; Mohelska & Sokolova, 2018). Indeed, most enterprises undergo various degrees of organizational adaptation throughout their lifespan in response to

environmental changes (David & Rowe, 2015; Modrak et al., 2019; Stouten et al., 2018). In this context, the primary responsibility of business leaders lies in maintaining continual alignment between the overarching characteristics of the environment and the organization's capacity to navigate its perpetual evolution (Chelil & Ayad, 2009; Pluchart, 2008; Pozzi et al., 2023; Pelletier & Moreau, 2006).

In the contemporary business landscape, establishing a robust organizational structure is imperative for enterprises aiming to maintain their competitive edge and effectively adapt to the evolving demands of new technologies (Lezon Rivière et al., 2020; Llinás Sala & Abad Puente, 2019). According to these scholars, the increasing pace of organizational changes fosters the fluidity and revitalization of existing competencies within companies. Leveraging proficiency in new internet technologies and acquiring new skills are pivotal in surmounting challenges posed by environmental uncertainties (Richard et al., 2021; Zhang & Yang, 2021). The mounting pressures, escalating competition, and the emergence of the internet all contribute to the swift evolution of organizational frameworks for leaders.

Nonetheless, internet usage can occasionally introduce flexibility and significant scope in the organization of work. Internet is not inherently deterministic; instead, it instigates organizational shifts with only a few proponents of change. Resistance to change stands out as a significant barrier to organizational transformation within companies. Indeed, organizational change encompasses intricate processes involving a multitude of stakeholders. Small and medium-sized enterprises (SMEs) encounter numerous challenges with organizational change, with difficulties primarily surfacing in human resources, technology, and structure. It appears that individual engagement in tasks and the presence of informal operational norms or rules, which are difficult to manage, lead to heightened tensions during periods of change.

The aim of this article is to offer a deeper comprehension of how internet usage influences the environment and organization of SMEs. Consequently, our research hypothesis posits that internet usage has a significant impact on the organization of small and medium-sized enterprises.

II. Research Method

Organization stands as one of the pivotal functions of management, delineating the structure within which task execution (through division of labor), the chosen authority relationships, and the prescribed codes of conduct are situated (Benkaraache & Ghanouane, 2020; Koscheyev, Rapgof, & Vinogradova, 2019). The adoption of internet technologies by small and medium-sized enterprises necessitates a reconfiguration of the company's value chain, spanning administration, production processes, and organization (France. Ministère de l’économie et Lorentz, 1998). The shift from traditional enterprises to the contemporary "e-business or e-commerce" paradigm entails a redefinition of marketing and commercial landscapes by embracing aspects of e-marketing and e-commerce (Kalika, 2000; Tortorella et al., 2020).

However, organization is frequently linked with a mechanistic perspective toward enterprises, wherein individuals' sole motivation is perceived as centered on increasing their income and benefits. The reductionist nature of this mechanistic view of human beings has been underscored by the human relations movement, notably through the contributions of E. Mayo, who views the organization as a social system where individual motivation holds fundamental significance.

Our research focuses on the Analamanga Region, situated in the heart of Madagascar, encompassing the capital city Antananarivo. The initial step of our methodology involves conducting bibliographic research and gathering primary data and information from various sources and relevant stakeholders (Gueguen & Yami, 2004). Hierarchical clustering analysis (HCA) and Discriminant Factor Analysis (DFA) are utilized to categorize surveyed enterprises based on their level of internet usage.

The variables in our study are as follows: explanatory variables consist of changes in the environment, evolution of skills, and employee behaviors; while the variable to be explained pertains to the impact of internet usage on organizational aspects such as personnel, structural, and technological organization. Our null hypothesis, denoted as H0, posits that internet usage does not significantly affect the organization of small and medium-sized enterprises.

III. Results and Discussion

The surveys conducted have provided insights into the diverse effects of internet usage on the environment and organization of SMEs.

3.1 The effects of internet use on the environment of SMEs

Based on our investigation, it is evident that internet usage has significant impacts at the enterprise level.

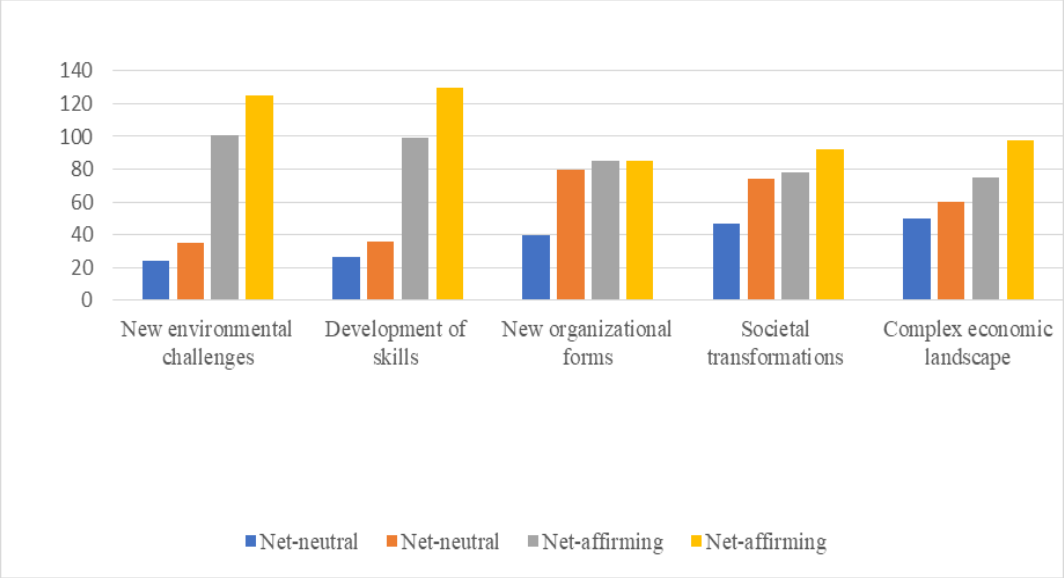


Figure 1. *The Impact of Internet on Business Environments*
Source: Survey Results 2021-2023

Based on our survey findings, the majority of knowledgeable executives and employees (over 75%) acknowledge the positive impact of internet usage on enterprise operations. Conversely, 23% of respondents view the internet solely as a routine tool. Additionally, a significant portion of executives (over 70%) and employees (over 80%) agree that internet usage contributes to the development of employee skills. Moreover, more than half of executives (over 55%) and surveyed employees (over 50%) believe that internet usage leads to organizational adjustments within the existing hierarchy. Furthermore, a majority of executives (62%) and surveyed employees (53%) recognize the beneficial effect of internet usage on economic complexity. They note that the internet's integration into enterprise operations heightens competition challenges in markets for small and medium-sized enterprises.

3.2 Perceived Effects of Internet Utilization on the Business Environment

In the subsequent illustration, the ramifications of internet utilization on the commercial milieu are delineated.

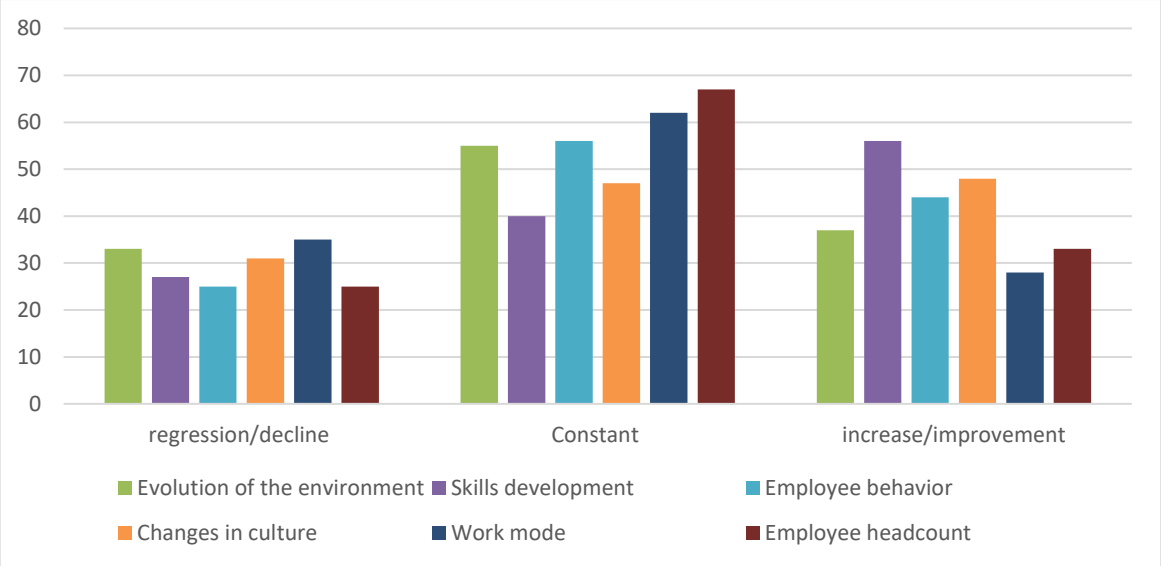


Figure 2. *Impacts of Internet Usage on the Business Environment*

Based on the survey findings, more than 65% of respondents among executives acknowledge that internet usage within enterprises positively impacts staff competence, whereas 17% indicate no discernible effect of internet usage on staff competence. Regarding the perception of the internet's influence on the business environment, 26% of executives view it as causing confusion, while over 50% perceive no significant impact, and more than 23% consider it a stimulating tool. Additionally, approximately 27.2% of executives observe that internet usage leads to intergenerational conflicts among employees, while 30% note that it fosters employee influence. On the other hand, 12% report that internet usage results in delays and a reduction in staff numbers, while 29% observe that it supports personnel recruitment within enterprises.

3.3 Impacts of Internet Usage on Business Organization

Categorization of Enterprises Based on Internet Usage Levels

The outcome of the Hierarchical Clustering Analysis (HCA) produced a dendrogram that divides the enterprises into three clusters according to coherence rings.

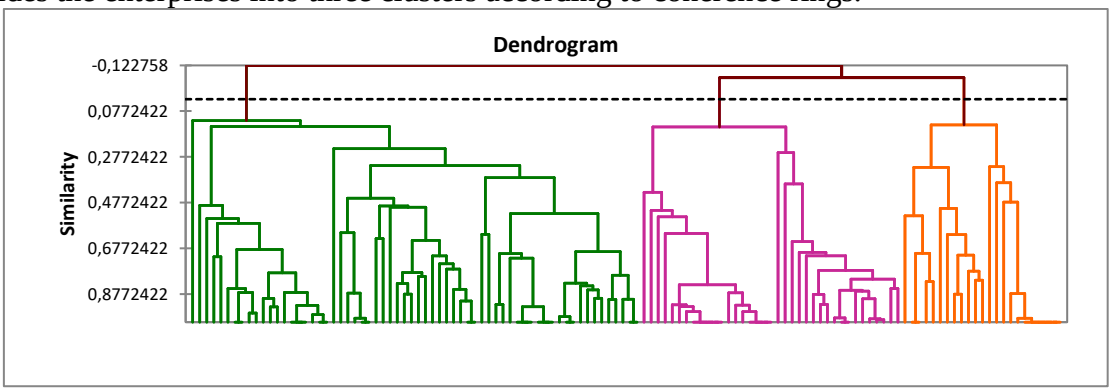
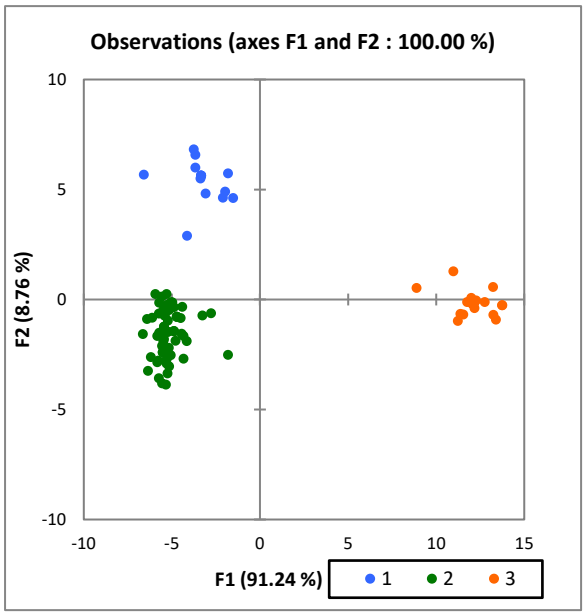
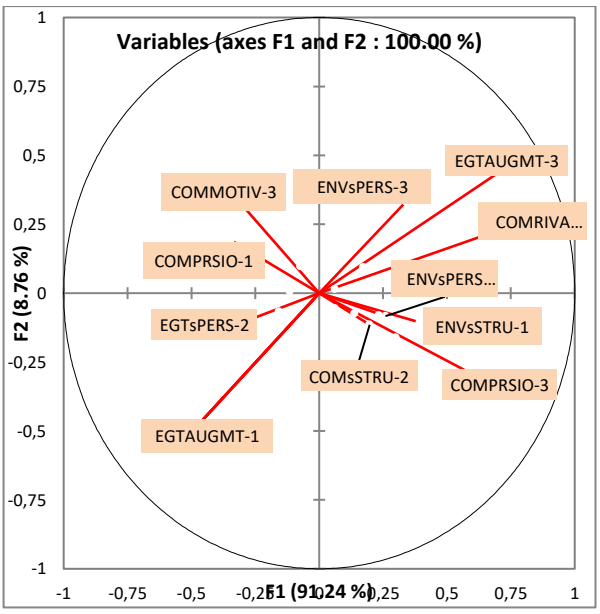


Figure 3. *Dendrogram of Enterprises Based on Internet Connectivity Level*

The utilization of Discriminant Factor Analysis (DFA) confirmed the three clusters of enterprises identified by the Hierarchical Clustering Analysis (HCA). DFA enabled us to categorize the surveyed enterprises into three distinct groups based on their internet usage levels along the axes of the factorial plane F1 and F2, with total inertia absorption of 100%. This outcome indicates that 53% of the surveyed enterprises are classified in the development phase regarding internet usage in their operations. Additionally, 29% of the surveyed enterprises are classified in the maturity phase regarding internet usage, while 18% are classified in the launch phase.





According to the results of the analyses conducted, the surveyed enterprises are classified into three distinct groups based on their daily internet usage:

Group of Enterprises (E1), representing 18% of the observed enterprises: This group is characterized by inherent organizational change practices with very limited skills and investments in internet usage.

Group of Enterprises (E2), representing 53% of the surveyed enterprises: This group is in the development phase regarding daily internet usage, characterized by progressive organizational change practices with average skills and medium-level investment in internet usage.

The last group (E3), representing 29% of the interviewed enterprises: This group is strongly characterized by organizational learning practices with maximum usage and maximum investment in internet usage.

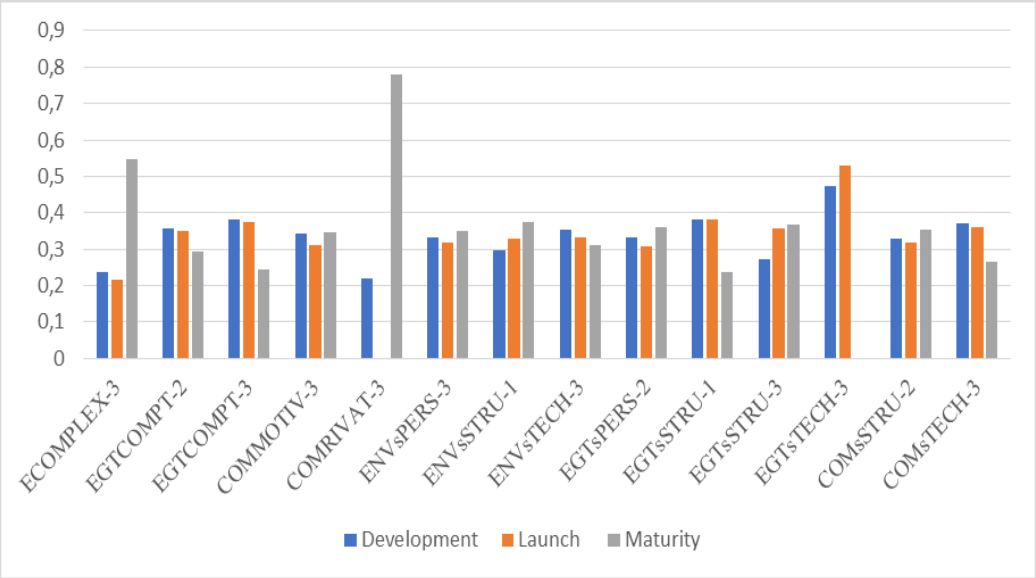


Figure 4. *Characteristics of Internet Impact on Business Organization*

Internet usage has significant impacts on business organizations. These impacts vary according to the degree of daily internet usage.

According to sources, for enterprises in the maturity phase of internet usage, the emergence of internet engenders a more volatile environment. This is marked by the proliferation of faster and broader competitors, as well as the rapid emergence and disappearance of markets. The impact of internet on organizational dynamics is substantial; its usage necessitates adjustments in employee management. Key facets of internet's integration into enterprises in the maturity phase manifest in employee behavior, particularly in terms of motivation. Employees have become more dynamic and proactive in task execution, although internet usage also contributes to the emergence of generational divides among employees. Internet usage in enterprises affects both personnel and technological aspects of organization. Overall, this assessment underscores the significant role of internet usage in shaping business organization.

According to sources, for enterprises in the development phase, leaders affirm that the influence of internet usage on organization is evident in environmental transformation. Customers have become more discerning, with social class distinctions fading, resulting in changes in demand complexity such as momentary customer needs. Internet usage also introduces new pressures on employees concerning perceived changes in their work. The proliferation of internet usage fosters insubordination within organizations, yet it innovatively revitalizes individual employee knowledge and daily motivation. In this developmental phase, enterprises are compelled to adapt their organization based on internet-induced demands, often affecting organizational structure and personnel.

According to sources, for enterprises in the startup phase, leaders attest that internet usage necessitates organizational adjustments across personnel and all routine activities. Employees require knowledge to attain a necessary level commensurate with advancements in internet technology. The advent of the internet also plays a decisive role in employee recruitment, based on the profiles of new hires. Internet usage significantly influences employees' areas of expertise. The introduction of the internet in enterprises has considerable impacts on changing employee behavior in terms of societal norms. The integration of the internet at the enterprise level requires well-considered decisions to avoid potential pitfalls and setbacks in work

processes. The emergence of internet in enterprises subtly alters the work environment, primarily observed in personnel organization.

3.4 Discussion

a. Impact of Internet Usage on Business Environment

Internet is an emerging tool that tends to revolutionize the current economic model and businesses. The use of the internet significantly impacts the business environment. The emergent characteristics can be summarized as follows: complexity, dynamism, turbulence, flexibility, and complexity within enterprises. The advent of the internet contributes to various evolutions in the business environment, both at the level of executives and employees. According to the above results (Figure 1), the evolution of staff competencies is closely linked to changes in existing practices and organizational changes within enterprises. Internet usage in enterprises is an important factor in deploying personnel competencies in various domains. Individual skill development within enterprises represents a growing specialization among individuals in general, subject to approval and acceptance by executives. The advent of the internet poses challenges for human resource management and economic complexity for small and medium-sized enterprises. Internet usage requires a certain level of knowledge, training, and skills for enterprises to achieve their objectives. Internet is a valuable tool for information research within enterprises, and its implementation and usage are highly demanded by various stakeholders in daily life. Internet is an innovative tool in the business world, and for current generations, its advent has significant impacts on the business environment.

b. Impact of Internet on SME Organization

The three groups of studied enterprises (startups, enterprises in the development phase, and enterprises in the maturity phase) have demonstrated that the extent of internet usage significantly influences changes in business organization. Startups, characterized by low daily internet connectivity, are more susceptible to organizational changes compared to enterprises in the development and maturity phases. Startups typically exhibit constitutive organizational change practices, leading to significant alterations in organizational structure and disposition. During this phase, leaders often implement structural changes or acquire necessary skills for the effective functioning of the enterprise. The second group comprises enterprises in the development phase of internet usage, representing the majority of surveyed enterprises. These enterprises experience organizational adjustments influenced by internet usage, implementing evolutionary organizational change on a daily basis. Such changes occur gradually and periodically, tailored to specific domains within enterprises. The third group consists of enterprises that have advanced in internet usage across various domains, engaging in organizational learning practices. In this group, organizational learning underscores its crucial importance, particularly in times when markets and technologies are considered more evolutionary. Internet usage has become an indispensable tool in these enterprises, with a symbiotic relationship between organization and technology necessitating significant reorientation in enterprise organization. According to technological imperatives, technology dictates organization and its functions. Leaders must adapt organizational structures in enterprises in response to technological evolution and market demands.

IV. Conclusion

Internet emerges as a transformative tool across all sectors, exerting a heightened influence on business organization. Its implementation and utilization within enterprises precipitate noteworthy organizational adaptations. Internet usage reverberates through the

business environment, both locally and externally. The surveyed enterprises are stratified into three distinct organizational categories based on the frequency of required daily adjustments. Evolutionary shifts in strategy, marketing, and managerial protocols are particularly apt for small and medium-sized manufacturing enterprises. Our aim is to validate the significant impact of internet usage on the organization and environment of small and medium-sized enterprises (SMEs). It is firmly asserted that internet utilization positively shapes the enterprise's environment and organization, though with varying degrees of impact among different enterprises. These variances can be elucidated by specific variables at the daily operational level. What are the diverse regulations and prerequisites necessary for fostering the development of SMEs in Madagascar?

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